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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/955,632	09/18/2001	Kunal R. Parekh	MI22-1816	3955

21567 7590 11/06/2002

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EXAMINER

HUYNH, YENNHU B

ART UNIT PAPER NUMBER

2813

DATE MAILED: 11/06/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/955,632

Applicant(s)

PAREKH ET AL. 

Examiner

Yennhu B Huynh

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 and 44-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 and 44-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This Office Action is in response to the Preliminary Amendment filed on 9/18/01.

Claims 26-43 have been canceled by Preliminary Amendment filed on 9/18/02.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Method Of Forming Capacitors.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 50-59 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 44-51 of U.S. Patent No.

6,207,523. Although the conflicting claims are not identical, they are not patentably distinct from each other because the difference between the two recited limitations is described as of "a doped region formed on a semiconductor substrate" and "a node location defined by a doped region of the semiconductor substrate". The node location (or plug) can have the same function as of the doped region. In the case if the node location needed not be formed in the structure, the doped region can serve as an electrically contact point.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1, 2, 5-21, 24, 25 & 44-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown (U.S. 5,418,180).

Brown discloses a process for fabricating storage capacitor structure, which includes:

Re. claims 1, 2, 5-21, 24, 25 & 44-49 : an amorphous silicon mass 61 within an opening formed over a node location 13 or a doped region 11 of a silicon substrate 10 (figs. 2B & 6, col. 3 & 4, lines 64-2, col. 4, lines 261-63), the mass comprising two forms

of silicon are exposed doped silicon 41 and exposed undoped silicon 31, and the undoped silicon 31 in physical contact with the doped region 13 or 11 (fig. 7B); a rugged polysilicon from one of the forms exposed undoped of silicon 31, 51, and not from other forms of exposed doped silicon 41 (figs. 6 & 7); a cell plate proximate the rugged polysilicon and doped silicon include capacitor dielectric layer 81 and capacitor plate 82 (fig.8, col.5, lines 24-27).

Claims 50-57 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu et al. (U.S. 5,913,129)

Wu et al. disclose a method of fabricating a capacitor structure, which include:

Re. claims 50-57: an insulative layer 26 over a doped region 24 formed on a semiconductor substrate 20,32; an opening 46 through the insulative layer to the doped region; filling the opening with amorphous silicon 47 / polysilicon 48, wherein the doped silicon inside of undoped silicon, that comprising doped and undoped to define a capacitor storage node and exposing a sidewall surface of the storage node, forming HSG 47 from the undoped silicon of the exposed sidewall surface, and forming a cell plate 52 proximate the storage node (fig. 5C, col.4 & 5, lines 26-39).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3,4,22 & 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown (U.S. 5,418,180) in view of Kim et al. (U.S. 5,324,679).

Brown disclose substantially all of claimed invention except for the range of silicon dopant concentration (cls. 3 & 4), the using of HF for the cleaning the silicon surface and the range of temperature in forming the HSG (cls. 22 & 23).

Re. claims 22 & 23: the use of HF for cleaning a silicon surface in forming HSG structure disclosed by Kim et al. (col.4, lines 9-13, col. 8, cl. 11)

Re. claims 3,4,22 & 23: the range of silicon dopant concentration and temperature in forming the HSG are considered to involve routine optimization while has been held to be within the level of ordinary skill in the art, As noted In re Aller, the selection of reaction parameters such as temperature and concentration would have been obvious.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Brown's process from Kim et al. 's process by using the conventional method of using the HF for cleaning the silicon surface , and the optimum or workable ranges by routine experimentation which having a preferred range of dopant concentration as well as temperature to obtain a desired HSG structure layer.

Claims 58 & 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. (U.S. 5,913,129) in view of Kim et al. (U.S. 5,324,679).

Wu et al. disclose substantially all of claimed invention except the using of HF for cleaning the silicon surface and the range of temperature in forming the HSG.

Re. claims 58 & 59:

- the use of HF for cleaning a silicon surface in forming HSG structure disclosed by Kim et al. disclose (col.4, lines 9-13, col. 8, cl. 11)
- the range of temperature in forming the HSG are considered to involve routine optimization while has been held to be within the level of ordinary skill in the art, As noted In re Aller, the selection of reaction parameters such as temperature and concentration would have been obvious.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wu et al.'s process from Kim et al. 's process by using the conventional method of using the HF for cleaning the silicon surface , and the optimum or workable ranges by routine experimentation which having a preferred range of dopant concentration as well as temperature to obtain a desired HSG structure layer.

"Normally, it is to expected that a change in temperature, or in range, concentration, cycles, thickness, would be an unpatentable modification. Under some circumstance, however, changes such as these may be impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely degree from the results of the prior art ... such ranges are termed "critical ranges and the applicant has the burden of proving such criticality ... More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation."

In re Aller 105 USPQ233, 255 (CCPA 1955). See also In re Waite 77 USPQ 586 (CCPA 1948); In re Scherl 70 USPQ 204 (CCPA 1946); In re Irmischer 66 USPQ 314 (CCPA 1945); In re Norman 66 USPQ 308 USPQ 308 (CCPA 1945); In re Swenson 56 USPQ 372 (CPA 1942); In re Sola 25 USPQ 433 (CCPA 1935); In re Dreyfus 24 USPQ 52 (CCPA 1934).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yennhu Huynh whose telephone number is (703)308-6110. The examiner can normally be reached on Monday-Friday from 8:00 AM to 4.30PM.

If attempts to reach the examiner by telephone are unsuccessfully, the examiner's supervisor, Carl Whitehead, Jr., can be reached on (703) 308-4940. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

YNBH,
11/1/02


CARL WHITEHEAD, JR.
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800